



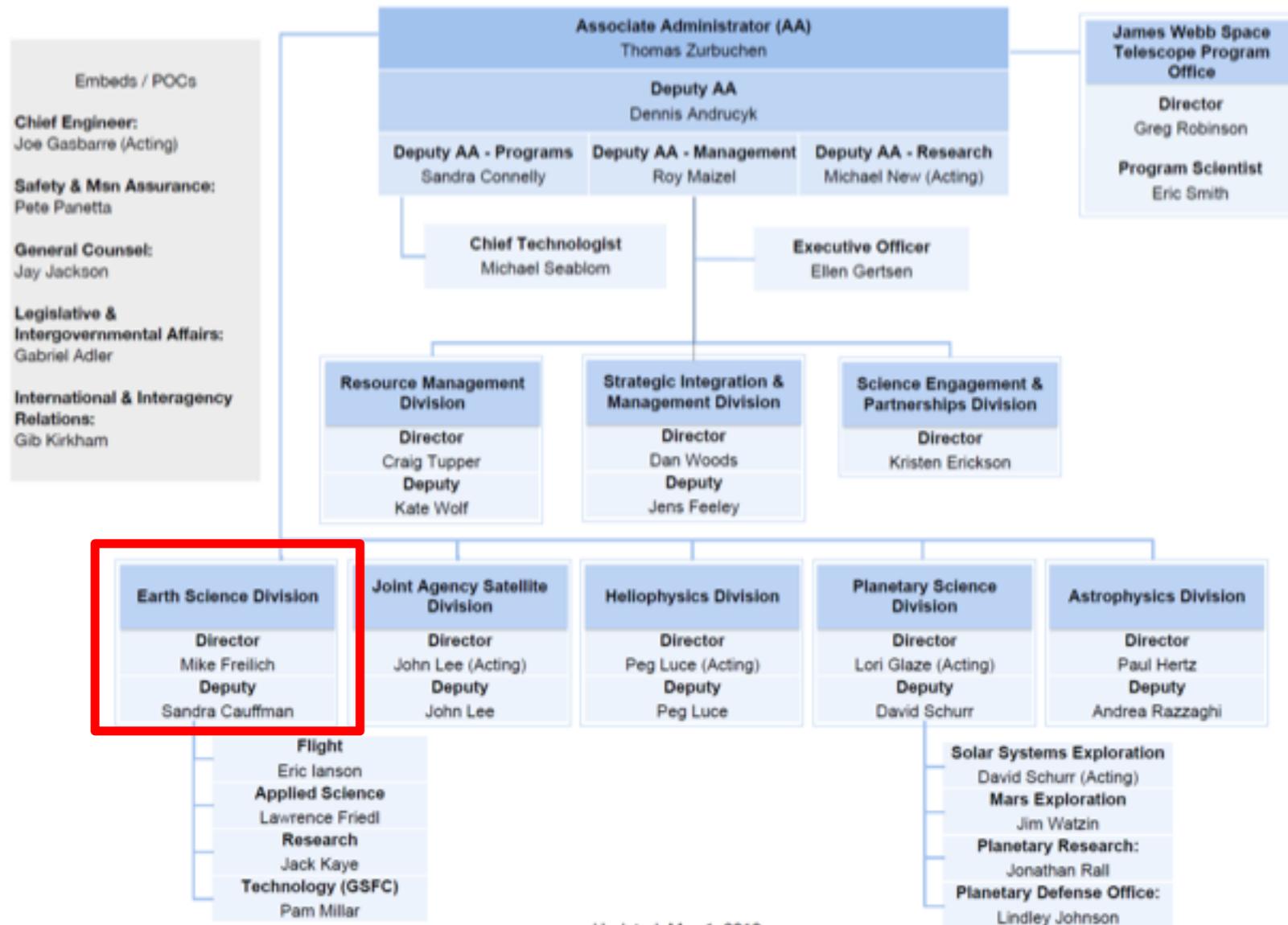
Earth System Science Pathfinder Program

Management of EVI Missions

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July 19, 2018



ESSP in NASA Organization



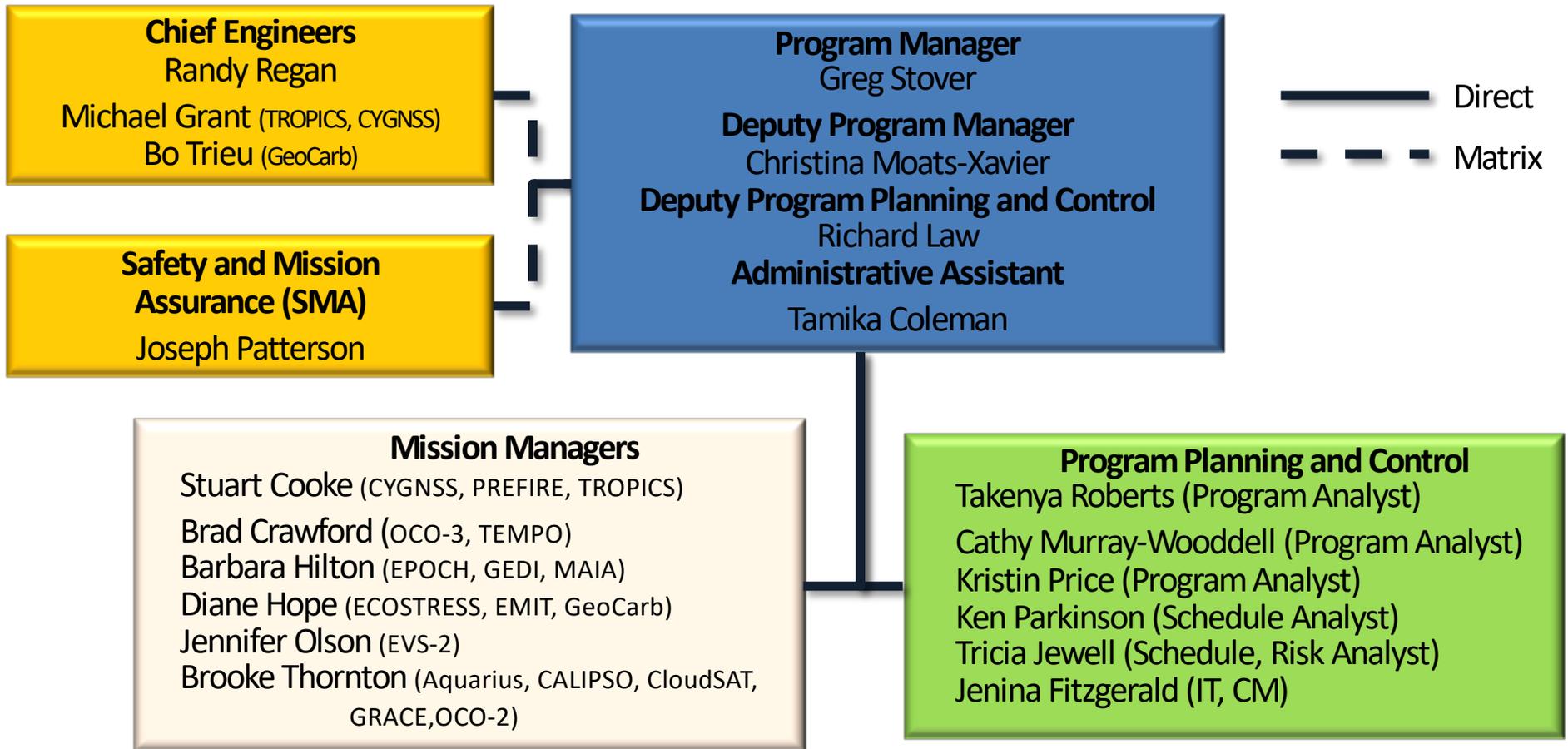
Updated: May 1, 2018



ESSP in NASA Organization



ESSP Organizational Chart



NOTE: SMEs are utilized at the Program level and at the Project level.



EVI Management Philosophy (1 of 2)

Management of Earth Venture Instrument Investigations

- Management approach allows flexibility in processes and procedures for implementation while ensuring NASA programmatic requirements and risk posture are visible and acceptable
 - The PI has a large degree of freedom/responsibility to accomplish the proposed science objectives and achieve a successful mission
 - NASA is required to perform oversight to ensure project is on-track to meet mission success criteria
 - Mission will comply with the requirements of NPR 7120.5E and NPR 7123.1B
 - Some tailoring may be appropriate
 - May use developer defined equivalent processes
- Focus will be to work with the project to develop credible technical and programmatic plans and track plans vs. actuals

EVI Management Philosophy (2 of 2)



Goal of ESSP Program Office is to facilitate instrument success:

- Advocate for instrument with stakeholders
- Inform ESD on progress, issues and accomplishments
- Work with Program Scientist and Program Executive to assess status and risks
- Examine the proposed development practices and processes and work with instrument team to use these to meet NASA requirements

ESSP uses insight to facilitate instrument success



Project Interaction

Per SALMON-3 AO 4.1.2 *NASA Program Management*: “NASA will exercise essential oversight to ensure implementation responsive to requirements and constraints of NPR 7120.5E and other NASA requirements documents”

- Nominal activities
 - Reporting on technical, cost, schedule, and risk, beginning in Phase A:
 - Weekly telecons to understand implementation progress and foster discussion of issues
 - Monthly reporting to ESSP coordinated with implementing organization reporting process & products
 - Participation by NASA in project reviews, technical interchange meetings, science team meetings
 - Support from project on gateway assessments
 - Ad hoc telecons/meetings
- Subject Matter Expert Assessments
 - May be initiated by the Program Office to inform risk assessments
 - May be performed in conjunction with the project’s activity or tiger team
 - Assessments available to the PI for consideration

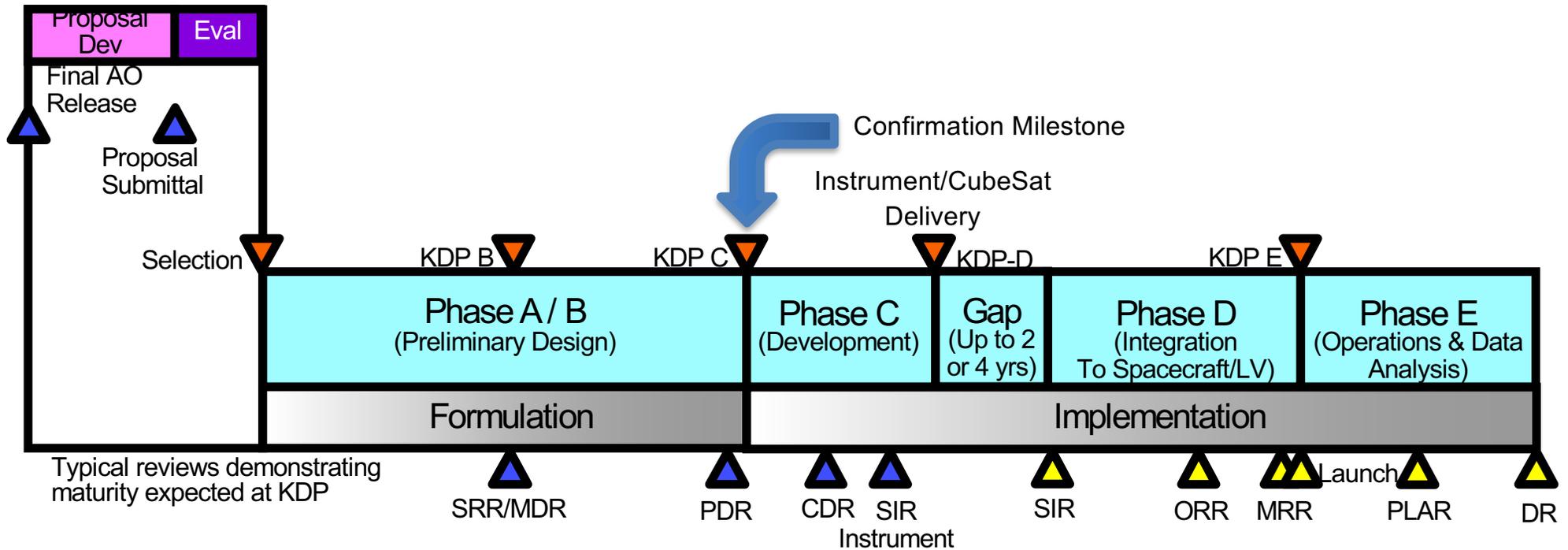


Project Reviews Implementation

- Project can propose Tailored Technical Reviews – subject to approval through the Terms of Reference/Formulation Agreement
- Tailoring options are documented in the Compliance Matrix and have traceability to NPR 7123.1B and NPR 7120.5 E:
 - Products from Technical Review entrance and success criteria (NPR 7123.1B, Appendix G)
 - Expected product maturity (preliminary, baseline, updates) (NPR 7120.5E, Tables I-4 & I-5)
- Approach:
 - Goal is to have a host provider / launch vehicle on board by Instrument PDR
 - Utilize one SRB for all reviews (Hosted mission and Instrument, or Cubesat)
 - Provides continuity across all of the reviews and ensures a mission level perspective
 - Minimizes logistical challenges with multiple review boards
 - Nominal Instrument reviews planned up to Instrument delivery
 - Notional Host Spacecraft reviews; to be confirmed during formulation phase with SRB participation
 - For Cubesats, nominal reviews planned up to delivery



EVI Life Cycle Reviews



- Key Decision Points
- Instrument Reviews
- Host Mission Reviews

- SRR/MDR = System Requirements Review/ Mission Definition Review
- PDR = Preliminary Design Review
- CDR = Critical Design Review
- SIR = System Integration Review
- ORR = Operations Readiness Review
- MRR = Mission Readiness Review
- PLAR = Post Launch Assessment Review
- DR = Decommissioning Review



Contractual Award Process

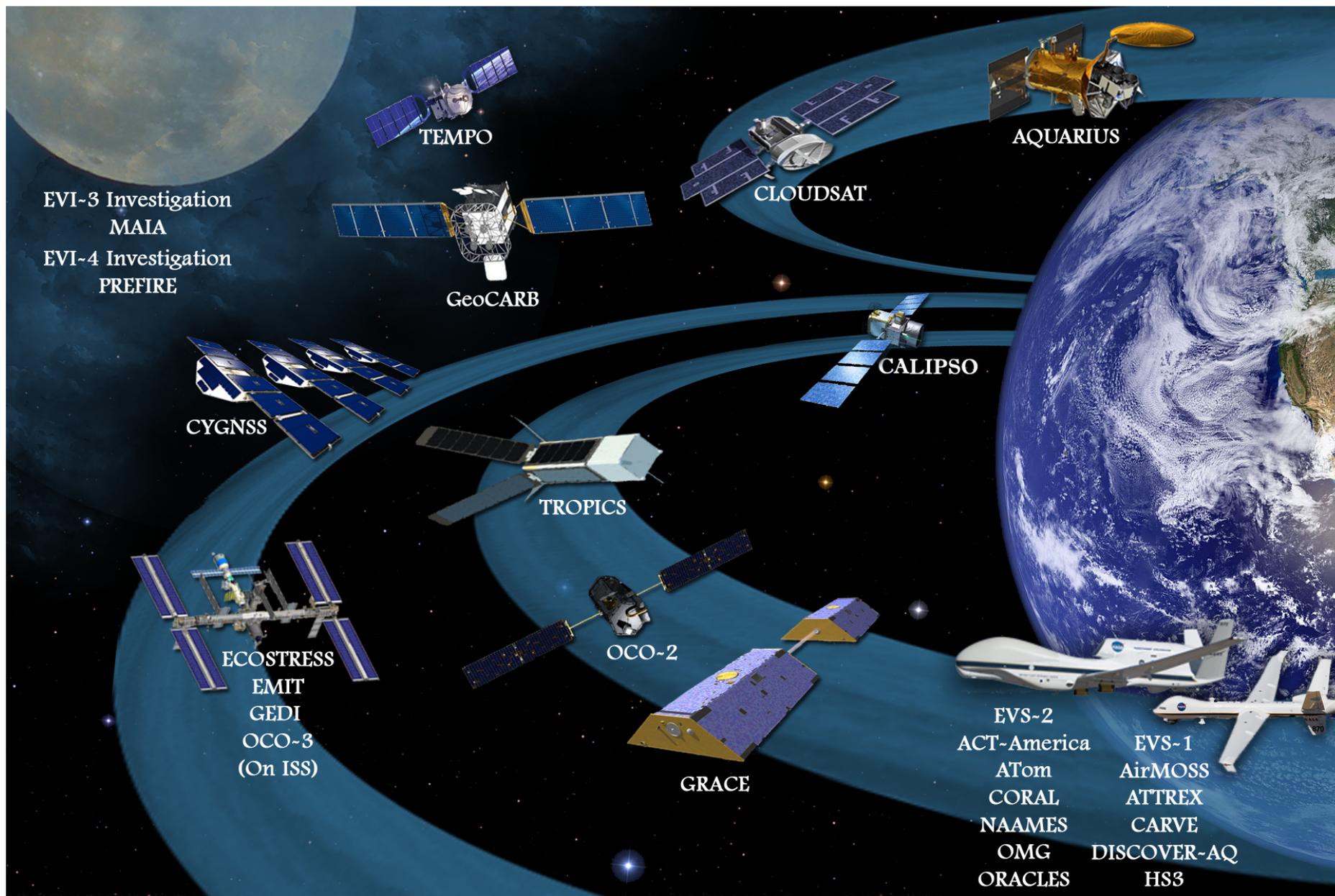
- Upon selection, proposal team develops Statement of Work (SOW)
- NASA Mission Manager and selected proposal team, with guidance from the NASA Contracting Officer, finalize the SOW and the deliverables
 - Typically a 4 to 6 month process
- The NASA Contracting Officer will:
 - Request revised cost proposal and negotiate based upon finalized SOW and contract type
 - Negotiate type of contract/terms and conditions – based on best method to achieve the objective of the statement of work and project
 - Require a Certificate of Current Cost or Pricing Data



Accommodations Process

- Cost-Cap versus Accommodations
 - Accommodations funded items are those that are outside of the proposal and are necessary to accommodate the instrument on a NASA-selected host
 - Potential host platform providers can include NASA, other U.S. agencies, foreign space agencies, or commercial vendors
 - After selection, a study of potential opportunities will be conducted by ESSPPO/ESD with the intent to make a recommendation to ESD of best host platform (considering Science, schedule, cost, risk)
 - Selected host platform will inform the implementation approach for accommodations
 - PI/Project team support for the host assessment activity is essential – defining requirements and potential impacts to science
 - It is imperative to track accommodations costs by WBS separately from the cost-cap mission costs

We look forward to welcoming the next Earth Venture Instrument into the ESSP portfolio





Backup



Common Instrument Interface

- Hosted Payload Guidelines Document
 - Provides a prospective Instrument Developer with technical recommendations to assist in the design of an instrument that may be flown as a hosted payload either in LEO or GEO
- Hosted Payload Opportunity Database
 - Provides information regarding future Earth satellites containing sufficient breadth and depth so that NASA Earth Science Flight Programs and prospective EVI proposers can be successful when matching instruments with HPOs
 - CII will not publish any updated database entries until NASA announces the results of the current EVI selection process
- Both available as a link from the ESSP Program website – Common Instrument Interface – CII Reference Documents and EVI Library



Payload Risk Classifications

Class Risk classification defined in NPR 8705.4, “*Risk Classification for NASA Payloads*”

EVI

Characterization	Class A	Class B	Class C	Class D
Priority (Criticality to Agency Strategic Plan) and Acceptable Risk Level	High priority, very low (minimized) risk	High priority, low risk	Medium priority, medium risk	Low priority, high risk
National significance	Very high	High	Medium	Low to medium
Complexity	Very high to high	High to medium	Medium to low	Medium to low
Mission Lifetime (Primary Baseline Mission)	Long, >5years	Medium, 2-5 years	Short	Short < 2 years
Cost	High	High to medium	Medium to low	Low
Launch Constraints	Critical	Medium	Few	Few to none
In-Flight Maintenance	N/A	Not feasible or difficult	Maybe feasible	May be feasible and planned
Alternative Research Opportunities or Re-flight Opportunities	No alternative or re-flight opportunities	Few or no alternative or re-flight opportunities	Some or few alternative or re-flight opportunities	Significant alternative or re-flight opportunities
Achievement of Mission Success Criteria	All practical measures are taken to achieve minimum risk to mission success. The highest assurance standards are used.	Stringent assurance standards with only minor compromises in application to maintain a low risk to mission success.	Medium risk of not achieving mission success may be acceptable. Reduced assurance standards are permitted.	Medium or significant risk of not achieving mission success is permitted. Minimal assurance standards are permitted.
Examples	HST, Cassini, JIMO, JWST	MER, MRO, Discovery payloads, ISS Facility Class Payloads, Attached ISS payloads	ESSP, Explorer Payloads, MIDEX, ISS complex subrack payloads	SPARTAN, GAS Can, technology demonstrators, simple ISS, express middeck and subrack payloads, SMEX



Monthly Reporting

- Monthly reporting provided to ESSP is intended to keep open communication regarding project status, future plans, and issues
- *Typical Report Content:*
 - Report of **Key Technical Performance Parameters**
 - **Technical status** for system and subsystem design and development activities, including subcontract technical performance
 - **Science** Activities
 - Summary of **Integrated Master Schedule*** including summary upper-level schedule, top critical path(s), schedule reserve status and variances with explanations
 - Status of **open Issues and Problems**
 - **Risk and Mitigation** status for significant risks
 - Summary of **Financial** status including funding and staffing, planned vs. actuals, variances and explanations, reserves – liens and encumbrances
 - **Project Manager's assessment**, significant accomplishments with photos (as available)

**Access to native format schedule on monthly basis requested*



Program Office Assessments

- At Key Decision Points, ESSPPO will perform an assessment of project performance and include a recommendation to DPMC
- Information used in the assessment include:
 - Independent Cost & Schedule Estimates – often produced by more than one independent estimator – focused on estimate at 50% confidence level
 - Cost plans versus actuals
 - Reserve status and burn-down plan
 - Technical performance
 - Integrated Master Schedule
 - Risk Management
 - SRB Assessment from lifecycle review
- Assessment developed with support from project and shared with project prior to DPMC



Lines of Authority and Communications

